National AIR & SPACE [Warfare] Model

NASM PROJECTIONS FOR LOGISTICS--IOC AND BEYOND

Presented to

AFAMS LOGISITICS/COMBAT SUPPORT/MOBILITY DAY

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C R Krieger

Description of NASM Training Objectives and Fidelity Requirements

AS RELATED TO LOGISTICS

NASM IOC Training Objectives

National Air and Space [Warfare] Model (NASM)

- **JSIMS: Provide a constructive simulation environment for a Joint Task Force Commander to *train* process with his senior subordinate commanders and principal staff**
- **NASM: Provide effective training to JFACC and his principal staff at the (J)AOC**
- **Continuing and Post Exercise Analysis conducted by White Cell "Gray Beards"**
- **Exercises will *not* be vehicles to prove any particular military premise**

NASM USE CASES

National Air and Space [Warfare] Model (NASM)

F1 The Training of the JFACC

- The JAOC
  - The Generals and Colonels and
  - The Night Shift

F2 The Training of the AFFOR

- The AOC
  - The Generals and Colonels and
  - The Night Shift

F3 The Training of the WOC (Build 2.0)

- The Wing Commander and His Four Colonels
  - Ops Group
  - Log Group
  - Support Group
  - Medical Group

NASM IOC Learning Points

- **The formation and organization of a Joint Task Force (JTF)**
- **The relationship of higher and lateral headquarters; intergovernmental, interdepartmental, and inter-Service challenges**
- **The command and control of senior JTF commanders and staff**
- **The formulation of JTF war-fighting concepts and distribution of orders**
  - **For A&S domain/NASM:**
    - **Apportionment, allocation, and allotment of air assets (What is air power best able to do to support the objectives of the JTF/CC?)**
    - **Air Tasking Order (ATO)**
    - **Airspace Coordination Order (ACO)**

Assumptions

- **<u>High</u> resolution within the combat simulation is <u>not</u> required to stimulate staff actions to accomplish training objectives.**
- **A JSIMS exercise will focus on staff learning at two levels (JTF and subordinate Component Commanders) rather than on Service or sub-unit learning.**
- **The IOC initial JTF training audience will train at a training site; likely the Joint Training and Simulation Center (JTASC) at Norfolk, Virginia.**

Resolution Strategy

National Air and Space [Warfare] Model (NASM)

- **Requirements stated herein are for IOC, unless otherwise noted.**
- **Proceed first with a comprehensive, but broad and shallow (low resolution, low fidelity, but with many scenario elements) approach.**
- **Design low resolution/fidelity models for use throughout JSIMS life cycle:**
  - **Low resolution will be needed along with high resolution models for various use cases.**
- **This approach has the following advantages:**
  - **Lowers risk**
  - **Produces useable system early**
  - **Produces no “throwaway” models**

Fidelity/Resolution LOGISTICS

National Air and Space [Warfare] Model (NASM)

JSIMS Enterprise
Resolution/Fidelity WG

- **Entities consume (according to usage) things" which affect fighting effectiveness or significant replenishment actions**
  - **Fuel**
  - **Weapons/ammunition**
  - **Expendables**
- **Fuel consumption depends on:**
  - **Speed (includes "hotel" loads at 0 speed)**
  - **Environmental conditions (e.g. sea state)**
  - **Altitude for aircraft**
- **In-port and underway replenishment of ships provided:**
- **Air-to-air refueling provided**
- **Ships can carry cargo up to capacity**
- **Cargo for amphibious operations can be organized by serial numbers**

Strawdog System Operational Concept

National Air and Space [Warfare] Model (NASM)

Build 1

- JTC level resolution
- Controllers issue commands at task level
- Limited focus on small set of key behaviors -- takeoff, fly point-to-point, mission-specific recovery, ...
- Behavior varies by mission, not aircraft
- Air-to-Air Engagement determined by rules (Vs. individual “dog fights”)

Build 2 to IOC

- Same as above plus inclusion of wider range of behaviors including aircraft-specific behaviors where required

FOC

- Controllers issue commands at mission-level
- Automation at mission or phase level
- Behavior varies by mission and aircraft (as required)

Examples of NASM Log Play

- **Consumption of Logistics Stocks**
  - **Fuel**
  - **Bombs**
  - **TRAP**
  - **Chaff and Flares**
- **Maintenance**
  - **Factors for Turn Times**
  - **Factors for Break Rates and Fix Times**
  - **Factors for Operations Under Adverse Circumstances (eg, Gas)**
- **Battle Damage**
  - **Resolution of Air Engagements give Clean, Kill, Battle Damage**
  - **Big Items Considered (Engines, Radars, Big Holes)**
  - **Factors for Time to Repair**

Larger Logistic Issues

- **Army does Inter- and Intra-Theater Logistics.**
  - **Ver 1.1 for CSS.**
  - **Ver 1.2 for TSS.**
  - **Ver 1.3 for Actual Loads for Airlift.**
- **CMI will examine impact of air attacks on Blue and Orange.**
  - **Primary, Secondary and Cascading Effects.**
  - **At IOC Consider issues such as reduction in road and pipeline throughput.**
  - **MSOs must subscribe to the CMI model.**
- **AMC Wings are <u>not</u> in Use Case F3.**
- **Depots do <u>not</u> play.**

Discussion of NASM CMMS

AF USER SUPPORT FOR CMMS

National Air and Space [Warfare] Model (NASM)

- **Identify Authoritative Sources**
  - **Organizations/POCs**
  - **Documents**
- **Provide Authoritative Data**
  - **Documents**
  - **Data**
- **Review Conceptual Representations**
- **Validate Representations**
  - **Service Validation (NASM)**
  - **Joint Validation (Cross Domain Interactions)**

Issues

- **What is the Role of Logistics, Combat Support and Mobility in Training of the JFACC, the AFFOR and the WOC?**
- **What is the Role of Logistics, Combat Support and Mobility in NASM?**

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  - Ops Group
  - Log Group
  - Support Group
  - Hospital Group

F4 The A-4?

Issues

- **What is the Role of Logistics, Combat Support and Mobility in Training of the JFACC, the AFFOR and the WOC?**
- **What is the Role of Logistics, Combat Support and Mobility in NASM?**
- **Who will Validate NASM Requirements in the areas of Logistics, Combat Support and Mobility?**
- **What should go in the JBASS?**
- **What Sequencing Do We Want?**
- **Are We ready to provide Authoritative Data Sources and Experts?**
- **What is to be done OUTSIDE of NASM?**

NASM Points of Contact

National Air and Space [Warfare] Model (NASM)

NAME	PHONE	EMAIL
Larry O'Brien	(978) 475-9090. X 1221 (978) 440-1601	lobrien@drc.com
Cliff Krieger	(978) 475-9090, x 3091 (978) 440-1563	ckrieger@drc.com kriegec@nasmmail.nasmnet.com
Mike Shannon	(978) 440-1743	shannom@nasmmail.nasmnet.com

Description Of NASM CMMS Validation Process

Fidelity/Resolution AIR PLATFORMS

National Air and Space [Warfare] Model (NASM)

JSIMS Enterprise

Resolution/Fidelity WG

- **Aircraft entities reflect**
  - **Aircraft weight limitations**
  - **Loading from stores**
  - **Only loads appropriate to the aircraft**
  - **Cargo capacity defined as**
    - **Maximum cargo volume**
    - **Maximum cargo weight**
    - **Personnel capacity**
  - **Recovered items returned to stores**
- **Fuel Consumption for fixed wing depends on**
  - **Aircraft type**
  - **Speed**
  - **Altitude**
- **Fuel Consumption for rotary wing depends on flight time only**

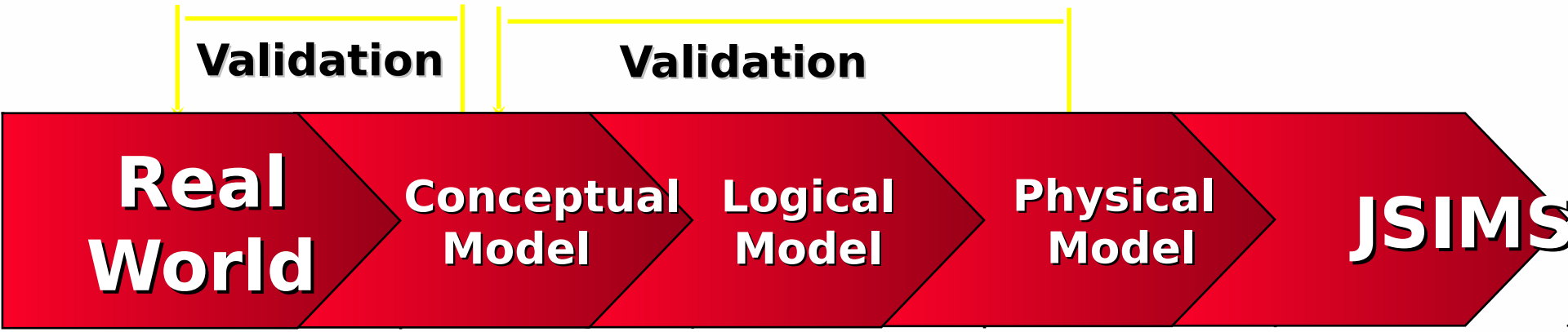
Definitions

National Air and Space [Warfare] Model (NASM)

- **Resolution refers to the granularity of the model or the presence of descriptive attributes.**
  - **Model flight of aircraft instead of individual aircraft**
  - **Model cluster bomb or burst of cannon as one event or as each individual part of cluster or burst**
  - **Model at level of companies, platoons or individual soldiers**
  - **Radar detection as function of range only instead of using radar cross section**
  - **Include (or not) the effects of the ionosphere on communication**
- **Fidelity refers to the accuracy of a model when compared to the real world.**
  - **Position in meters; velocity in meters/sec**
  - **Radar cross section as a function of aspect angle instead of one constant value**
- **Resolution as granularity implies a level of aggregation (or deaggregation).**
- **In almost all cases, increased resolution implies increased fidelity, but not necessarily.**

User Validation

- **Users validate Mission Space Objects against the Conceptual Models**
  - **Intra-domain validation led by service**
  - **Inter-domain validation led by JWFC**



Service Validation

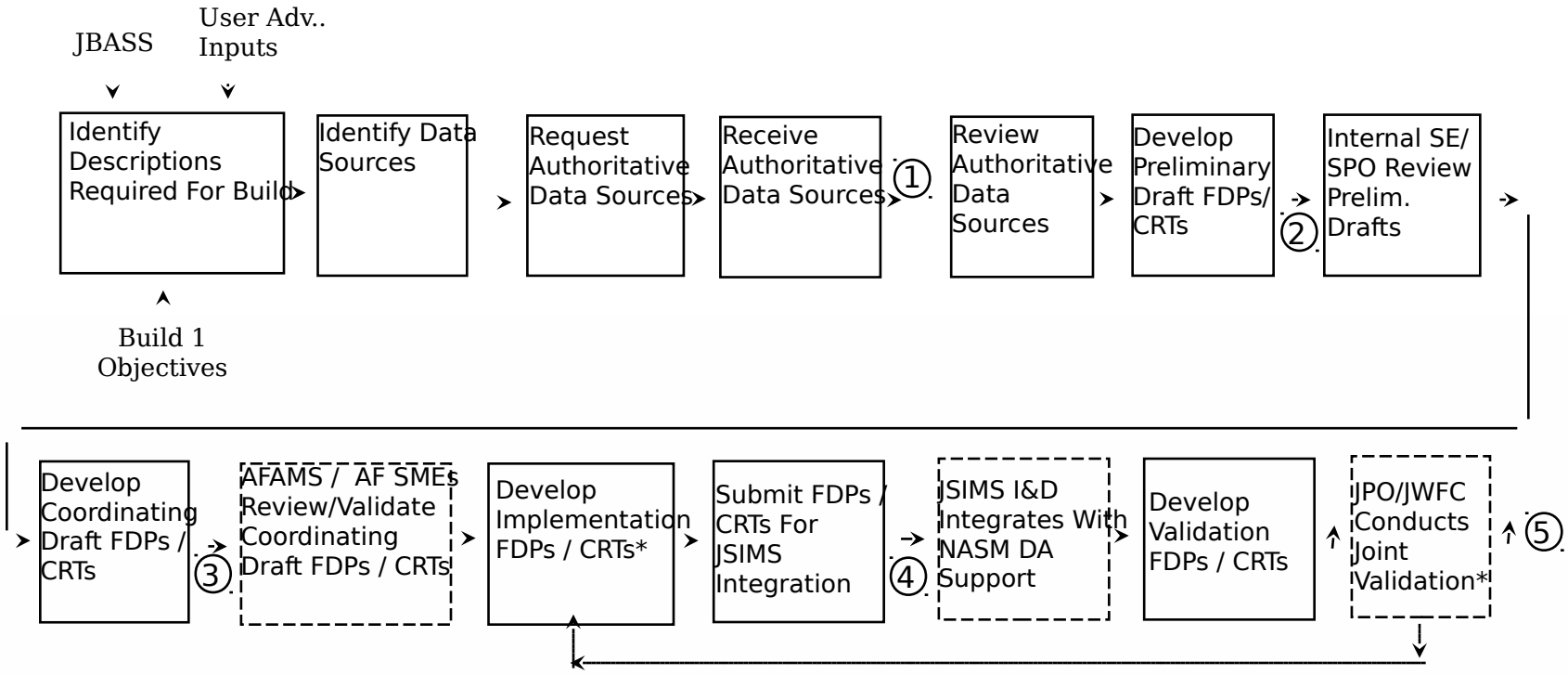
- **Objective--**Validate that the ***content*** is correct (accurately reflects Air Force doctrine and/or the real world) and appropriate given the IOC training objectives.
- During service validation, Air Force elements of the mission space are validated.
- Joint validation validates cross domain interactions.
- Verification (e.g., checking format) is not part of service validation.

Service Validation Outcomes

- Validated
- Conditionally Valid--Will be valid after minor changes are made.
- Rework--Make identified changes and resubmit product
- Not Qualified--SME does not feel qualified to make

CMMS Process Flow

National Air and Space [Warfare] Model (NASM)


JBASS
User Adv.. Inputs
Identify Descriptions Required For Build
Identify Data Sources
Request Authoritative Data Sources
Receive Authoritative Data Sources
1
Review Authoritative Data Sources
Develop Preliminary Draft FDPs/ CRTs
2
Internal SE/ SPO Review Prelim. Drafts
Build 1 Objectives
Develop Coordinating Draft FDPs / CRTs
3
AFAMS / AF SMEs Review/Validate Coordinating Draft FDPs / CRTs
Develop Implementation FDPs / CRTs*
Submit FDPs / CRTs For JSIMS Integration
4
JSIMS I&D Integrates With NASM DA Support
Develop Validation FDPs / CRTs
JPO/JWFC Conducts Joint Validation*
5

* As required

1 - ADS On Hand
2 - Preliminary Draft FDPs / Specific CRTs
3 - Coordinating Draft FDPs / CRTs
4 - Implementation FDPs / CRTs
5 - Validated FDPs/ CRTs